United Nations A/62/321

General Assembly

Distr.: General
5 September 2007

Original: English

Sixty-second session
Item 49 of the provisional agenda*
2001-2010: Decade to Roll Back Malaria in Developing Countries, Particularly in Africa

2001-2010: Decade to Roll Back Malaria in Developing Countries, Particularly in Africa**

Note by the Secretary-General

The Secretary-General hereby transmits the report prepared by the World Health Organization, in accordance with General Assembly resolution 61/228.

* A/62/150.

** The compilation of inputs required to include the most current information has delayed submission of the present report.

07-49705 (E) 011007

Report of the World Health Organization entitled "2001-2010: Decade to Roll Back Malaria in Developing Countries, Particularly in Africa"

Summary

The present report highlights the activities undertaken and progress made since the last report in meeting the 2010 malaria goals, in the context of General Assembly resolution 61/228 and the Abuja Declaration on Roll Back Malaria in Africa (2000).

The report reviews, inter alia, developments in case management and prevention, and prospects for the elimination of malaria, including issues related to research and development and resource mobilization. In addition, the report also addresses the problems associated with malaria in pregnant women and the special challenges of malaria and health systems strengthening. The report provides conclusions and recommendations for the consideration of the General Assembly.

Contents

		Paragraphs	*Page*
I.	Introduction and background	1–4	4
II.	Access to effective treatment for malaria	5–11	5
III.	Malaria in pregnancy	12–14	7
IV.	Malaria prevention	15–20	8
V.	Surveillance, monitoring and evaluation	21–22	10
VI.	Malaria elimination	23–24	11
VII.	Malaria and health systems	25–27	12
VIII.	Funding and resource mobilization	28–31	13
IX.	Progress in and challenges to achieving the Millennium Development Goals	32–33	15
X.	Conclusions and recommendations	34–37	16

I. Introduction and background

1. The seven years since the inception of the Decade to Roll Back Malaria in Developing Countries, Particularly in Africa have seen the advent of the Global Fund to Fight AIDS, Tuberculosis and Malaria, the World Bank Booster Programme and the United States President's Malaria Initiative, representing significant political and financial commitments to malaria control. However, the disease continues to threaten at least 40 per cent of the world population in 107 countries and territories. Despite global efforts, more than 500 million people suffer from acute malaria each year, resulting in an annual toll of more than 1 million deaths per year, of which at least 86 per cent are in sub-Saharan Africa. Every day, an estimated 3,000 children and infants die of malaria, representing approximately 82 per cent of all malaria deaths. Approximately 50 million women living in malaria-endemic areas will become pregnant every year. While malaria in pregnancy is predominantly asymptomatic, it is a major cause of severe maternal anaemia, and is responsible for approximately one third of preventable low birth weight babies. It is estimated that the indirect effects of malaria, which are mostly overlooked in estimates of malaria-related morbidity and mortality, result in up to 200,000 infant deaths per year in Africa alone, and contribute to the deaths of an estimated 10,000 pregnant women. While children and pregnant women are at greatest risk owing to their reduced immunity, outside of Africa, all age groups are at risk.

2. Recent studies have shown that in some countries nearly two thirds of the population with illness seeks care outside the health system. This indicates that the malaria morbidity and mortality recorded through the health system represents only the "tip of the iceberg". Almost 60 per cent of all malarial deaths are concentrated in the poorest 20 per cent of the world population, the highest association of any disease with poverty, as it is mostly concentrated in poor and marginalized populations, including refugees and internally displaced persons. Malaria has lifelong effects on cognitive development, education and productivity levels. In many countries it is the leading cause of illness and absenteeism in the workforce. The evidence shows that malaria keeps poor people poor, costing Africa $12 billion per year in lost gross domestic product (GDP) and consuming up to 34 per cent of household incomes and 40 per cent of government health spending. Countries with the highest burden have an estimated 1.3 per cent reduction in economic growth every year. Malaria lowers economic growth and increases poverty through numerous channels, including private and non-private medical care costs, reduced productivity of malaria sufferers and caretakers, by inhibiting the movement of labour and by discouraging foreign direct investment, trade and tourism.

3. The Roll Back Malaria Partnership, which was launched in 1998 by the World Health Organization (WHO), the World Bank, the United Nations Children's Fund (UNICEF) and the United Nations Development Programme (UNDP), and includes malaria-endemic countries, their bilateral and multilateral development partners, the private sector, non-governmental and community-based organizations, foundations and research and academic institutions, has the main objective of coordinating support to Member States in order to halve malaria mortality by 2010 and by 75 per cent by 2015, relative to 2000. All of these constituencies are represented on the Roll Back Malaria Board. During 2006, the Partnership underwent a significant "change initiative", which resulted in a restructuring of the Partnership secretariat, which is hosted by WHO, and made it more responsive to the needs of Member

States, including the revitalization or restructuring of working groups such as the Harmonization Working Group, the Monitoring and Evaluation Reference Group, and the Procurement and Supply Chain Management Working Group, and subregional networks.

4. The World Health Organization Global Malaria Programme is the key technical partner in the Partnership providing normative guidance and leadership in policies and strategies for malaria control. The Programme encompasses a lean staff at headquarters and at regional and country levels, as well as crucial links with other WHO departments. The key components forming the basis of WHO strategic direction are: (a) strong technical leadership and support to countries; (b) a comprehensive focus on malaria-endemic countries worldwide; (c) supporting malaria-endemic countries in applying the best available tools, including free or highly subsidized distribution of long-lasting insecticide-treated nets to all at-risk groups, indoor residual spraying where indicated and diagnosis of malaria cases and treatment with artemisinin-based combination therapies (ACTs); (d) working closely with countries and their in-country partners to ensure that interventions are tailored to their particular epidemiologic and socio-economic needs; (e) ensuring that malaria control efforts contribute to overall health systems strengthening and supporting integrated delivery of essential health services; (f) focusing on the development and implementation of effective, comprehensive monitoring and evaluation tools to measure malaria programme performance, effective coverage and impact; (g) supporting priority research to develop new methods and tools to address implementation bottlenecks; (h) facilitating well-coordinated partnership at the country level to ensure that support is harmonized and aligned with national strategies and plans; and (i) fostering a multisectoral approach, with strong health leadership, to gather political and financial support for sustainable, predictable investments in malaria control. At the country level, WHO is successfully working with partners, such as UNICEF, to scale up distribution of insecticide-treated nets, and the World Bank, to ensure adoption of appropriate drug policies and increased access to ACTs worldwide.

II. Access to effective treatment for malaria

5. ACTs are currently considered the best treatment for uncomplicated malaria due to Plasmodium falciparum. WHO's call for countries to shift away from monotherapies, which have lost their effectiveness due to parasite resistance, has been heeded by many countries. Nevertheless, safeguarding the efficacy of ACTs continues to be of critical importance. As recommended by WHO, 70 countries — 40 of them in Africa — have adopted artemisinin-based combination therapies as their first or second-line treatment. The availability of financing for ACTs and the steadily increasing volume of purchase and strong advocacy have helped to push the cost of ACTs down. The financing facility UNITAID, established in late 2006 in partnership with the Global Fund to Fight AIDS, Tuberculosis and Malaria and UNICEF, has already begun providing antimalarials and is focusing on using market forces to further reduce the costs of ACTs to make them more broadly accessible. In 2006, a total of 82,774,740 ACT doses were procured, and it is estimated that 120 million treatments will be procured during 2007. Nevertheless, the costs of ACTs are still often beyond the reach of the most poor, and the majority of patients in

remote rural areas depend on inappropriate treatments from informal providers close to their homes.

6. While malaria is an acute illness, it is also a chronic infection; estimates of frequency of fever among African children suggest one episode every 40 days. The risk of developing complications and death from severe malaria is greatest during the first 24 hours. The correct and prompt management of malaria patients is therefore a fundamental part of malaria control programmes. Early diagnosis and effective treatment of the disease will shorten its duration and prevent the development of complications, thereby greatly reducing the majority of deaths from malaria. In most cases, symptomatic malaria is treated in communities, in peripheral primary health facilities and informal health structures. Recent studies in Ethiopia, Ghana and the Niger found that up to two thirds of the population with illness seek care outside the health system. Effective case management must therefore ensure that appropriate, effective treatment is available at each level of health care, both public and private, as, in some affected communities, the private sector may be the sole provider of antimalarial medications. Increasing community education and participation is also a vital component of effective malaria case management.

7. The WHO home-based management of malaria approach improves access to effective treatment by vulnerable populations (especially children under five years of age) in countries that have low health facility coverage. In Africa, 18 countries have adopted the strategy, of which a number are scaling it up with good community participation and are already experiencing a reduction in childhood mortality. In addition, WHO now recommends the use of rectal artemisinin suppositories as a pre-referral treatment for severe malaria. This intervention has the potential of saving child lives by rapidly reducing parasite densities until the child reaches a health facility where parenteral treatment can be provided.

8. WHO currently recommends parasitological-based confirmation (microscopy or rapid diagnostic test) before treatment, except for children under five years of age in areas of high transmission and suspected severe cases if parasitological confirmation is not immediately available. This will improve the quality of care and will reduce unnecessary use of antimalarials in general. However, it has led to an upsurge in the requests for and use of rapid diagnostic tests in countries. Nevertheless, the gold standard in diagnosis remains high quality microscopy. The quality of products (medicines and diagnostics) and services is also critical for good clinical outcomes, and yet poses enormous challenges in countries. In addition, there are a number of substandard products on the market, and even counterfeit antimalarial medicines. To ensure that countries procure high quality medicines, WHO has established a prequalification scheme for both antimalarials and rapid diagnostic tests with quality assurance laboratories in various regions and is supporting countries to develop a functional network of diagnostic services; a quality assurance system for both microscopy and rapid diagnostic tests; and assessment and training services for microscopists.

9. Monitoring antimalarial drug efficacy is mandatory to allow for proper case management and for early detection of changing patterns of resistance in order to revise national malaria treatment policies. Implementation of adequate and effective drug policy will lead in turn to a reduction of morbidity and mortality. The accepted malaria standard procedure is therapeutic efficacy testing, which involves repeated assessment of clinical and parasitological outcomes of treatment during a fixed

period of follow-up. A standardized protocol for the assessment of antimalarial drug efficacy has been developed, and WHO helps countries in improving quality control of the data. Among the 82 countries where falciparum malaria is endemic, 75 countries have implemented a monitoring system using a national sentinel site network. Based on their surveillance data, more than 60 countries have changed their antimalarial drug policy from monotherapy to combination therapy.

10. Ensuring effective service delivery will put high demands on the health system and require it to address multiple issues, including: (a) efficient drug procurement, supply and distribution systems; (b) quality-controlled laboratory services for diagnostics; (c) adequate training in disease management of sufficient numbers of health staff; (d) quality assurance and drug efficacy surveillance; (e) facilities for referral of severe malaria patients to higher levels of care; and (f) a responsive health management information system. In many countries' public sector, these services, when available, are often of poor quality or facilities lack the necessary commodities. They are therefore underutilized and bypassed as a source of malaria treatment even by the most poor. The Global Malaria Programme case management task force, which bridges all three levels — headquarters, regional and country offices — has developed an operational manual for case management to support national malaria control programmes. The manual contains guidance on the necessary complementary introduction of a community-level surveillance system, including a revised malaria register, and data-collection and reporting forms to track key case management indicators for monitoring project performance, outcomes and impact.

11. Even though ACTs are currently being sold to buyers in the public and non-profit sectors at an ex-factory price of approximately $1, they are still prohibitively expensive for the most poor, and, with retail prices of $8-10 in the private sector, ACTs are available only to the wealthiest patients. A global initiative to enact a "global ACT buyer subsidy" is currently under way to save tens of thousands of lives per year by ensuring that the poor have better access to these essential life-saving antimalarial drugs and to preserve the utility of these drugs for as long as possible. This innovative financing mechanism would result in price reductions for buyers in all sectors, thereby supporting purchases of drugs across the public, private and non-profit sectors. By making drugs more readily available to all sectors, the duration of malaria disease could be reduced, and the current harmful use of monotherapies, which threaten to rapidly induce drug resistance to artemisinin, curtailed. Current estimates to fully implement the subsidy stand at about $275-300 million per year, which includes allocations for monitoring and evaluation, operational research and supportive interventions. It is expected that the subsidy of ex-factory prices could increase the volume of ACTs to 250-350 million treatments. A second-tier subsidy for distribution costs could then raise that volume of ACTs to 300 to 400 million treatments. Global discussions regarding the subsidy are ongoing.

III. Malaria in pregnancy

12. Over half of the approximately 50 million women who become pregnant in malaria-endemic countries each year live in tropical areas of Africa with intense transmission of Plasmodium falciparum. Even though malaria during pregnancy in these regions is mostly asymptomatic, it is a major cause of severe maternal

anaemia, and thereby responsible for approximately one third of preventable low birth weight babies. In areas of low or seasonal transmission, pregnant women are at increased risk of dying from the complications of severe malaria, and of experiencing spontaneous abortion, premature delivery or stillbirth. Co-infection with HIV, by exacerbating maternal anaemia and low birth weight, increases the burden of malaria in pregnancy still further.

13. Intermittent preventive treatment in pregnancy (IPTp) with sulfadoxine-pyrimethamine (SP), which has been a policy recommendation since 1998 in African countries, has been adopted as policy in all 35 African countries — 22 are deploying countrywide and 13 are at varying stages of implementation. However, deployment of IPTp is being challenged by widespread and increasing resistance of the parasite Plasmodium falciparum to SP. Pending further investigations, a meeting of the technical expert group on IPTp, held in July 2007, recommended the continued use of IPTp with SP as a strategy, along with scaling up distribution of insecticide-treated nets and access to effective treatment in sub-Saharan African countries with stable malaria transmission. IPTp is not recommended for areas of low, unstable transmission in Africa, Asia and Latin America, where emphasis is placed on the use of insecticide-treated nets and prompt recognition and treatment of malaria illness. A system of monitoring the effectiveness of the strategy is being put in place, and WHO will soon issue guidelines for monitoring SP efficacy in pregnant women.

14. WHO is working intensively with research partners to ensure that data is generated on the safety and efficacy of alternatives to SP for both prevention and treatment without delay. Since the majority of African countries have now changed to ACT for first or second-line treatment of malaria, there is an urgent need to obtain safety data on the inadvertent use of ACT in the first trimester of pregnancy. WHO is supporting the establishment of pregnancy registries to facilitate follow-up of women who were exposed to ACT during this critical period.

IV. Malaria prevention

15. WHO has made a recent shift in its guidance on the use of insecticide-treated mosquito nets to protect people from malaria. It is now recommended that insecticidal nets be long-lasting, and distributed either free or be highly subsidized and be used by all community members. Analogous to the "herd immunity" benefit of vaccines, long-lasting insecticidal nets have two kinds of protective effect: one for the people directly under the nets, and one for the community at large. An insecticide-treated net provides a physical barrier for the individual sleeping under it, and in addition, by repelling or killing any mosquitoes that rest on the net, provides an additional protective effect for the community. Therefore, by covering entire communities with long-lasting insecticidal nets, everyone sleeping under a bednet not only reduces their own risk of being infected with malaria, but, through a "mass effect" of the insecticide being available over long periods in the community, the number of mosquitoes in the community is also reduced, their lifespan is shortened and the transmission of malaria is curbed over the long run. Where young children and pregnant women are the most vulnerable, their protection is the immediate priority while progressively achieving full coverage. In areas of low transmission, where all age groups are vulnerable, national programmes should

establish priorities on the basis of the geographical distribution of the malaria burden.

16. It is estimated that around 135 million long-lasting insecticidal nets are needed to achieve universal coverage of only pregnant women and children under five years of age at risk of malaria in Africa. However, net coverage continues to be below agreed targets, particularly in most high-burden countries. Throughout the 31 countries that reported in the Africa region in 2005 — the last date for which complete data is available — 18,166,488 free or highly subsidized insecticide-treated nets were distributed, and 7,568,439 nets were re-treated. High coverage rates with a high degree of equity have been achieved in the following situations: free delivery to entire communities (Eritrea); free or highly subsidized delivery to pregnant women through the African National Congress (Malawi, Kenya, United Republic of Tanzania); and free distribution to children under five in combination with immunization campaigns (Zambia, Ghana, Togo and the Niger). On a more limited scale, high levels have also been achieved in combination with routine expanded programmes on immunization and child health days such as the UNICEF-supported Accelerated Child Survival Development Initiative projects in West and Central Africa. Unfortunately, in general, community-based projects have never been able to achieve high coverage levels in poor rural areas. While social marketing has sometimes been useful for creating demand, its cost-effectiveness has been questioned and it has not achieved high coverage among poor rural populations, especially when insecticide kits are needed to re-treat the nets. A policy targeting only vulnerable groups neglected a crucial point: unprotected individuals serve as reservoirs for malaria infection, carrying the parasite in their bloodstream, and therefore not only becoming sick themselves, but also facilitating transmission back to "protected" groups as nets are not 100 per cent effective. Optimum community protection is achieved when mass coverage with long-lasting insecticidal nets is combined with universal access to timely and effective antimalarial treatment.

17. The bottlenecks to scaling up insecticide-treated nets coverage have been: (a) the need for regular re-treatment; (b) availability; (c) affordability; and (d) implementation. Long-lasting insecticidal nets have been developed by industry to resolve the re-treatment issue and have been found to be significantly cheaper to use than conventionally treated nets. The cost per death averted and cost per disability adjusted life years averted with long-lasting insecticidal nets lasting three years were less than half the comparable costs using conventional insecticide-treated nets. Long-lasting insecticidal nets should therefore be considered a public good for populations living in malaria-endemic areas. Countries will continue to need assistance to scale up the necessary planning, organizational and managerial capacity to plan large-scale distribution campaigns. This must also include an information/education component, as some populations are still reticent to sleeping under an insecticide-treated net or do not use it consistently. The WHO insecticide-treated nets taskforce has drafted an operational manual to provide practical guidance for national implementers managing long-lasting insecticidal net interventions.

18. The other (and older) vector control intervention with wide applicability is indoor residual spraying: the application of insecticides to the inner surfaces of dwellings, where anopheline mosquitoes often rest after taking a blood-meal, with the aim of reducing their life span to such an extent that they cannot transmit

malaria. Indoor residual spraying has been used systematically and on a large scale mainly in those countries that were involved in the global malaria eradication campaign in the 1950s and 1960s.

19. The selection of insecticide for indoor residual spraying in a given area is based on data on insecticide resistance, costs, safety, type of surface to spray and local experience. There are currently 12 insecticides recommended by WHO for indoor residual spraying, belonging to four chemical groups. DDT has the longest residual efficacy against malaria vectors and plays an important role in the management of vector resistance. WHO recommends DDT only for indoor residual spraying, and countries can use DDT for as long as necessary, in the quantity needed, provided that the guidelines and recommendations of WHO and the Stockholm Convention on Persistent Organic Pollutants are all met. It is expected that there will be a continued role for DDT in malaria control until equally cost-effective and efficient alternatives are available. An updated position paper on DDT has been drafted by WHO, to be issued in late 2007. WHO is preparing a new comprehensive operational manual and new monitoring systems on indoor residual spraying, and will in the coming year greatly intensify its work to assist countries to make the best use of this intervention.

20. Trends in the application of indoor residual spraying vary from region to region. In Africa, approximately 22 countries use indoor residual spraying for malaria control or to prevent reintroduction (Angola, Botswana, Burundi, Cape Verde, Côte d'Ivoire, Eritrea, Ethiopia, Guinea, Kenya, Liberia, Madagascar, Mali, Mauritius, Mozambique, Namibia, Rwanda, Sao Tome and Principe, South Africa, Swaziland, Uganda, Zambia and Zimbabwe). In Asia, in four countries — Iraq, Myanmar, Thailand and Viet Nam (of 22 regular users) — the number of households covered increased from 2,297,000 to 3,052,000 from 2000 to 2003, and in the Americas, in 9 (of 21) countries regularly applying indoor residual spraying (Costa Rica, Nicaragua, Panama, Dominican Republic, Bolivia, Colombia, Ecuador, the Bolivarian Republic of Venezuela and Argentina), the overall number of households decreased from 411,000 to 229,000, even though coverage was actually increasing in some countries. The most people protected by indoor residual spraying in the world are in India, where 38.5 million people were protected in 2005, mainly with DDT.

V. Surveillance, monitoring and evaluation

21. Estimates fall short of the real burden as the disease covers a wide spectrum of presentations: ranging from asymptomatic infection to severe illness and death. The problem of measuring progress and impact is compounded by inadequate diagnosis and incomplete reporting. Additionally, countries generally have no baseline against which to measure. The vastly increased resources and efforts to scale up antimalarial interventions in populations at risk, particularly the World Bank Booster Programme, the Global Fund allocations for malaria and the United States President's Malaria Initiative, all call for rigorous monitoring and evaluation at the country level. Current reliance on routine health information systems is not sufficiently representative, as large sectors of the populace (mostly the lower quintiles) do not have access to health services, and information is not collected systematically. This has led to inaccurate programme assessments and failures to report adequately on the progress made.

22. Given the complexity of malaria as a disease and multiple malaria control interventions, many of which are delivered outside the public health system, monitoring and evaluation solutions need to be flexible to reach the community and household level, and capture data from hard-to-reach populations. WHO is helping countries in the development and implementation of a country database with field-tested indicators. The information for this database is being collected through the nationwide strengthening of health information systems, which will also help countries collect data for other diseases. Intensive data-collection efforts are ongoing in anticipation of the *World Malaria Report 2007* to be released in early 2008, which will contain information on epidemiological, programmatic and financial indicators. The Global Malaria Programme is also designing a generic health information management system that will help countries to properly assess programme performance, leading to improved policies and outcomes.

VI. Malaria elimination

23. The aims of the global fight against malaria are not only to reduce the burden of malaria in endemic areas, but also to reduce and confine the geographical extent of malaria-endemic areas in the world. The latter entails the elimination of malaria from countries and localities where this is feasible. Over the last decade, an increasing number of countries have been successful in interrupting local mosquito-borne malaria transmission, seen as vital for public health, business and tourism. At present, 7 of the 107 malaria-endemic countries and territories worldwide are reporting zero locally acquired infections. Others have reduced their malaria burden to levels where elimination is becoming a possibility. The WHO Global Malaria Programme has decided to put a renewed focus on malaria elimination, including the development of guidelines for national malaria elimination programmes, the provision of technical and operational support to countries in the near-elimination phase, and the setting up mechanisms for official certification. In January 2007, the United Arab Emirates was the first formerly endemic country since the 1980s to be certified malaria-free by WHO. Certification procedures for Oman are currently ongoing. Malaria elimination evolves from a successful countrywide malaria control effort. The WHO malaria elimination task force has identified four programme phases in this continuum: control; pre-elimination; elimination; and prevention of re-introduction. The milestone for the first of these phases has been determined as a malaria case load of consistently less than 5 per cent of all febrile patients. Full transition to an elimination programme is usually possible only once malaria cases are becoming relatively scarce, at less than 1 patient per 1,000 people at risk per year, or roughly 100 malaria patients per district annually. Progress towards elimination is in its final phase when locally acquired cases are down to zero. At present, some 10 countries worldwide are implementing malaria elimination programmes, including Algeria, Argentina, Armenia, Egypt, El Salvador, Iraq, Paraguay, Saudi Arabia, Turkmenistan and the Republic of Korea. A further 11 are implementing pre-elimination programmes,[1] and 7 countries are aiming for "malaria-free zones".

[1] Azerbaijan, Democratic People's Republic of Korea, Georgia, Iran (Islamic Republic of), Kyrgyzstan, Malaysia, Mexico, Sri Lanka, Tajikistan, Turkey and Uzbekistan.

24. The WHO European and eastern Mediterranean regions have adopted malaria elimination as (part of) their regional strategy, as a logical extension of the malaria control successes achieved by their member States. Over the period 1999-2006, the malaria-endemic countries in the WHO European region reported an almost 15-fold reduction in the number of locally acquired malaria cases, with a combined total of only 2,520 such cases recorded in 2006. Nevertheless, even when a country has eliminated malaria, it still remains at risk for re-introduction through international travel and migration. Malaria elimination is closely linked to the achievement of various Millennium Development Goals, as most countries that have successfully achieved interruption of malaria transmission have also achieved an improvement in the overall socio-economic situation, health services coverage and living standards of their populations. Malaria-free status also adds to these developments by removing barriers to investment and tourism.

VII. Malaria and health systems

25. Recent estimates show that malaria has a significant burden on health systems. In Africa, malaria, on average, is the cause of 25 per cent to 45 per cent of all outpatient visits. Malaria also has a high case fatality rate among admitted patients, as they often present late, or are managed inadequately, or effective drugs are unavailable. Effective malaria control requires better and improved health management and information systems and surveillance systems to help health planners quantify the burden of malaria, and adequately estimate and allocate resources to health services. Currently, effective delivery of interventions is hampered by lack of staff, and long-term predictable commitments of funding from the donor in order to strengthen the health-care infrastructure in malaria-endemic countries. Poor health infrastructure, coupled with insufficient supplies of essential drugs and other preventive measures, such as nets and insecticides, and inadequate supervision of health-care providers, leads to poor service delivery. Malaria-endemic countries need support to: (a) develop managerial capacity to oversee health-care personnel; (b) develop efficient mechanisms for quality laboratory services to ensure reliable diagnosis and effective case management; (c) increase accessibility of health services, especially in geographically remote areas; (d) improve private-public mechanisms for health service delivery; (e) strengthen procurement and distribution systems for medicines, reagents, insecticides and other essential commodities; and (f) put in place measures to retain skilled personnel at the district and community level.

26. Coordinated sectorwide development will greatly improve efforts to control malaria. The WHO Global Malaria Programme is focusing on scaling up and improving its support interventions particularly at the primary care level, in order to maximize the effectiveness of a given patient encounter with the health system. It is doing so through cascade-style training, which will address the current deficit in skilled personnel to deliver effective patient management at the health-facility level and the lack of training in epidemiology, entomology, and laboratory diagnostics. Special emphasis is also being placed on maximizing prevention, ensuring that services are tailored and delivered to the poor, vulnerable groups, and hard-to-reach populations. This will entail more health-care workers at the community level, teaching mothers and community-based workers to manage malaria at home.

27. There is a need for a multisectoral approach and for heightened advocacy with the ministries of finance to raise awareness of the benefits of investing in health and to gather political support for long-term investments in the health sector. Investments in malaria control are high yielding and highly cost effective: for a typical household of six people, coverage with three long-lasting insecticidal nets will cost between $0.55 and $0.91 per person per year. For a long-lasting insecticidal net that lasts five years, costing approximately $5.50, the estimated cost per child death averted is $145, with costs going down the longer the net lasts. It is critical to support countries in analysing their implementation gaps and to focus on understanding which high-impact, cost-effective interventions can be scaled up quickly in each country's context. Insecticide-treated nets, indoor residual household spraying, and intermittent preventive treatment during pregnancy were identified as neglected low-cost opportunities in sub-Saharan Africa in the 2006 report of the Disease Control Priorities Project. Additionally, the 2004 Copenhagen Consensus rated controlling and treating malaria as a "very good" use of resources in developing countries. The limiting factor to achieving high coverage and overcoming operational barriers is the level of health infrastructure, which in many malaria-endemic countries, particularly in Africa, is very low and continues to require substantial assistance from external donors. However, the evidence has shown that the incremental cost of interventions is lower when implemented together, as resources can be shared. There is a need for continued research into the relative cost-effectiveness of different interventions and combinations of interventions in various settings.

VIII. Funding and resource mobilization

28. The estimated global resources needed to effectively control malaria are about $3.8 to $4.5 billion per year,[2] depending on how fast prevention brings down the number of cases and therefore the need for treatment. This includes costs for commodities, distribution, health system strengthening activities, and technical assistance for national programmes. The average costs for Africa would be $1.7 to $2.2 billion. In addition, in order to receive adequate attention from donors and in national budgets, national health priorities must be linked with poverty reduction strategy papers, achievement of the Millennium Development Goals, and other development agendas. Issues of harmonization and predictability of external funding are critical when undertaking long-term investments in the health sector, and call for heightened coordination of countries and partners. At the country level, reliable information on burden of disease and financing for malaria services (particularly national spending) is lacking, rendering difficult informed policymaking and effective resource allocation. Use of the informal private sector for malaria treatment, combined with weak health information systems, presents a challenge for accurate estimation of current malaria spending. Approximately 60 per cent of all malaria episodes in sub-Saharan Africa are initially treated by private providers, mainly through the purchase of drugs from shops and drug peddlers. Furthermore, as donors move towards budget support rather than earmarked funding, there is a heightened need to develop effective tools to track the flows of development assistance for health. To address these issues, WHO is supporting the

[2] World Health Organization, "Estimated global resources needed to attain international malaria control goals", *Bulletin of the World Health Organization*, vol. 85, No. 8 (2007).

implementation of national health accounts in a number of countries, and is contributing to the development of a malaria sub-analysis framework that could be used to measure national malaria expenditures. Financing of national malaria control plans will need to take into account several key issues: (a) in countries that have adopted ACTs as first-line treatment for malaria, as per WHO guidelines, there is a need to identify sustainable source(s) of funds to meet current and future needs; (b) financing the distribution of long-lasting insecticidal nets to achieve wide coverage and usage, particularly in rural areas; and (c) identifying funding sources to attract, train and retain key service personnel who form the touchstone of malaria service provision across all interventions.

29. Governments must intervene to fund malaria control to correct market failures and inequities in provision of services. Public sector constraints include limited government revenues and restrictive macroeconomic policies. While there has been some alleviation in the form of debt write-off, this is still insufficient to encourage Governments to change their resource allocation patterns. More emphasis and research into methods of mixing public-private interventions to ensure patients are receiving the best quality of care is still required. In the 2000 Abuja Declaration, the Heads of State and Government pledged to allocate 15 per cent of national budgets to the health sector. Despite modest progress being made by some Member States, the proportion of national budget devoted to health financing is still low in many countries (only Djibouti and Botswana have proportioned 15 per cent or more of their national budgets to health). The last estimates found that about $300 million per year is provided by domestic sources for malaria.

30. The Global Fund reports that its total international disbursements for malaria up to August 2007 were approximately $1 billion. The Global Fund to Fight AIDS, Tuberculosis and Malaria is active in 77 countries, funding a total of 113 malaria grants for a total approved funding of $1.7 billion. However, the future of the Global Fund is by no means assured, and yet many countries have completely overhauled their systems in order to respond to the Global Fund without having assured long-term commitments beyond the initial two-year grant phase. If countries "perform well", they may go onto a further three years or be eligible for the recently instituted "rolling continuation channel" funding. The Global Fund has also begun exploring the possibility of funding a countries' national strategic plan when this is appropriately costed and is accompanied by a comprehensive workplan. Nevertheless, the Global Fund has not always been lenient in considering the implementation constraints particular to malaria, such as supply chain delays, including the long-lead in artemisinin production for ACTs and availability of long-lasting insecticidal nets, which are only now being resolved. Malaria grants, generally, have the lowest performance ratings (more grants are rated B2 and C) of the three diseases and therefore run the risk of grant loss more often.

31. Other major donors have also raised expectations that additional funds will be available for malaria. The United States President's Malaria Initiative established in 2005 has a goal of reducing malaria-related mortality by 50 per cent in 15 target countries in sub-Saharan Africa. This five-year initiative (2005-2010) is an announced increase in funding of $1.2 billion. However, other United States-sponsored malaria programmes (such as United States Agency for International Development umbrella grants for malaria) are being reduced apparently to cover the President's Malaria Initiative commitments. Also in 2005, the Global Strategy and Booster Programme for Malaria Control were launched as the World Bank's new

plan for controlling the disease. Over its first phase (2005-2008), 15 countries and one major cross-border regional project have been approved. The second phase, 2008-2015, is currently being designed. Total commitments for malaria control in Africa by the World Bank are currently approximately $500 million. In recognition of the need to ensure that funding is mutually reinforcing and complementary, the World Bank is emphasizing donor harmonization in malaria control, and is working to mobilize additional resources from partners. In 2006, the Bill and Melinda Gates Foundation committed $83.5 million in new malaria grants. This funding will support some malaria prevention and treatment programmes, as well as research and development. It is estimated that continual development of new drugs at the rate dictated by emerging drug resistance would cost at least $30 million a year.

IX. Progress in and challenges to achieving the Millennium Development Goals

32. One of the key developments in the past two years has been the reinforcement and redirection of WHO's malaria department to focus on developing strategies, guidelines and country-relevant tools on "how" to tackle malaria where the burden is greatest. The programme is also taking a lead role in defining research priorities and ensuring that critical gaps in knowledge are being addressed, ensuring that research outcomes deliver practical policy recommendations. All levels of the programme are coordinating and streamlining their technical guidance to scale up the three key interventions, namely, prompt and effective treatment with ACTs, distribution of long-lasting insecticidal nets to all at risk of malaria, and indoor residual spraying interventions to reach the poorest populations, and collecting undisputable evidence of efficacy, efficiency and operational impact.

33. While there are still many challenges to be faced on the African continent, there is evidence that malaria cases have decreased in seven countries (Botswana, Burundi, Eritrea, Malawi, South Africa, Swaziland and Zanzibar (Tanzania)). South Africa, in particular, was able to significantly reduce its morbidity and mortality through a combination of interventions, including 90 per cent operational coverage with indoor residual spraying in 2003 and 2004. Swaziland has also been able to reduce the number of clinical malaria cases by 75 per cent, from more than 45,000 in 2000 to less than 10,000 in 2005, representing one of the few examples of achievement of the Roll Back Malaria Partnership goal of reducing malaria morbidity by 2010. As of 2006, the Americas have also brought about a 21 per cent reduction in malaria cases, and a 69 per cent reduction in mortality, relative to 2000. Nonetheless, an outbreak of malaria in Jamaica in late 2006 showed that even countries that have been certified malaria-free or where transmission has been absent for over 10 years must remain highly vigilant of the threat of reintroduction. There has also been a decrease in the malaria situation in the nine countries in the Middle East and North Africa, relative to 2000. The nine malaria-endemic countries in the WHO's European region have also shown a decrease in their malaria situation relative to 2000. Progress in the region has been such that the European regional strategy for 2005-2015 is focusing on eliminating malaria from the region through the enhancement of national capacities for decision-making, investing in human development and capacity-building, improving capacities for disease management, strengthening capacities for containment and prevention of epidemics, promoting cost-effective preventive measures, strengthening surveillance and operational

research capabilities, ensuring community mobilization and enhancing intersectoral collaboration. In the WHO South-East Asia region, Bhutan, the Democratic People's Republic of Korea, Sri Lanka and Thailand have successfully reduced their malaria burden relative to 2000. However, the region's countries continue to be hindered by natural disasters and conflict, which undermines the health care delivery for all diseases, but in particular for malaria. All of the malaria-endemic countries of the western Pacific region have mostly shown steadily declining trends in confirmed malaria cases and annual mortality rates, except for Solomon Islands and Vanuatu.

X. Conclusions and recommendations

34. **Malaria control is currently hindered by a number of challenges. First, while there has been some progress since 2000, there is still a critical shortage of reliable, accurate and constant malaria data. Information is at times available at the peripheral level; however, not many countries, particularly in Africa, have in place either the capacity or management structures to aggregate and analyse indicators on the epidemiological situation, health delivery structure, drug and insecticide resistance, and resource flows at the central level. Without this information, countries cannot monitor programme performance, coverage or impact. National malaria programmes therefore cannot effectively guide the allocation of programme resources, take informed management decisions or enhance public-private collaborations to better reach target populations and goals. Second, while malaria-specific funding has been increasing, it is also increasingly focusing on the funding of commodities without concurrent increases in funding for technical assistance to build country capacity and the overarching needs of the health systems, which also hinder implementation of malaria programmes. This lack of funding and lack of capacity act on each other in a vicious circle: without capacity countries cannot absorb the available funding, and without funding they cannot develop capacity. Various initiatives are therefore hindered by implementation challenges and do not achieve their expected impact, leaving malaria morbidity and mortality levels unacceptably high.**

35. **Some interventions have begun to show substantial progress in recent years. Distribution of long-lasting insecticidal nets, particularly when combined with strong programmes such as the expanded programme on immunization, has been particularly effective and has begun to raise coverage rates in some areas. Increased access to effective case management and coverage with indoor residual spraying are progressing at a slower pace but are also beginning to demonstrate considerable improvement. Nevertheless, many countries will need to undergo extensive and fundamental changes in their malaria control programmes if they are to reach their malaria controls and targets. Such changes will require renewed commitment from all levels of the government and resources (both financial and human) for the implementation of accurate policies, and sustainable and evidence-proven strategies. New implementation challenges and knowledge gaps are emerging, and the resources available for malaria control still fall dramatically short of what is needed to effectively combat the disease. Compared to many other diseases, the tools to effectively control malaria are already known. Funding is reaching the country level, but**

malaria-endemic countries still need strategic and technical guidance to improve their capacities and ensure that funding is being spent effectively.

36. On the basis of the findings of the present report and those of World Health Assembly resolution 60/18, it is recommended that the General Assembly call upon malaria-endemic countries to:

(a) Apply WHO-recommended policies, strategies and tools to their specific contexts, and establish evidence-based national policies, operational plans and performance-based monitoring and evaluation towards scaling up effective coverage of major preventive and curative interventions to populations at risk, and assessing programme performance, intervention coverage and impact effectively in a timely manner;

(b) With support from WHO, use the country database to systematically collect and analyse existing information on their malaria situation, including epidemiology, national policies and programme performance, coverage of interventions, financing, and drug and insecticide resistance status;

(c) Assess the capacity of their national malaria programmes, particularly their human resources, and ensure that skilled personnel are in place in adequate numbers at all levels of the health system to meet technical and operational needs as increased funding for malaria control programmes becomes available;

(d) Respond to the need for strengthening their health systems and ensure integrated delivery of health services at the district level, including attention to health personnel, supplies of drugs and preventive measures, and adequate health infrastructure;

(e) Encourage intersectoral collaboration, particularly at the highest levels of government, i.e. the ministries of finance, education, agriculture, economic development and the environment, and maintain and strengthen existing intercountry, multi-institutional, and multisectoral malaria networks;

(f) With support from WHO, strengthen drug resistance surveillance systems, and WHO to coordinate a global surveillance network for monitoring and management of drug resistance;

(g) With support from WHO, undertake development of insecticide resistance surveillance systems, and WHO to coordinate a global network for monitoring and management of insecticide resistance;

(h) Continue to prohibit the marketing of oral artemisinin monotherapies, and the cessation of funding for the procurement of oral artemisinin monotherapies by international agencies;

(i) Waive taxes and tariffs for nets, drugs, and other products needed for malaria control, both to reduce the price of these commodities to consumers and to stimulate free trade in these products.

37. On the basis of the findings of the present report and those of the World Health Assembly resolution 60/18, it is recommended that the General Assembly call upon:

(a) Bilateral and multilateral funding partners to become fully knowledgeable of WHO's technical policies and strategies, including for indoor residual spraying, insecticide-treated nets and case management, to ensure that funding supports only projects that are in accord with these, and consider submitting technical components of projects under consideration to be reviewed by WHO prior to approval to ensure adherence to the latest WHO technical recommendations;

(b) International partners to use monitoring and evaluation systems as developed by WHO as minimum core indicators, rather than adopting parallel systems. In addition, WHO, together with countries and other partners, to develop simple, less costly survey methodologies to effectively assess impact and coverage of antimalarial interventions in a timely manner;

(c) All donor agencies and food-importing countries to issue a clear statement outlining their position on the use of DDT for indoor residual spraying, when it is implemented where indicated and in accordance with WHO guidelines, and to provide all possible support to malaria-endemic countries to manage the intervention effectively and prevent the contamination of agricultural products with DDT and other insecticides used for indoor residual spraying;

(d) Producers of long-lasting insecticidal nets to accelerate technology transfer to developing countries, and the World Bank and regional development funds to consider supporting malaria-endemic countries to establish factories to scale up production of long-lasting insecticidal nets;

(e) The international community to reach a consensus on appropriate levels and sources of subsidies for key commodities, namely long-lasting insecticidal nets and ACTs, to enable expanded access to good quality drugs and preventive measures to populations at risk of malaria, and to fight the counterfeit drug trade in developing countries;

(f) The international community, inter alia, to financially enhance the Global Fund to Fight AIDS, Tuberculosis and Malaria for it to be able to continue supporting countries, and to provide adequate complementary resources for technical assistance, particularly for the World Health Organization and the United Nations Children's Fund, to ensure that funds can be absorbed and used effectively in countries.